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Building a better shrimp

Sygen aims to grow saltwater species

By Greg Wells, gwells@bgdailynews.com -- 270-783-3276

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FRANKLIN — Far from the ocean home of her parents, a young female was plucked from her new Kentucky home by a Croatian man and forcibly inseminated by a man from Sri Lanka, in a cinder-block room in Franklin.

They sought to force her to produce hundreds of thousands of offspring from a male she may not have ever met. This is an occasional tribulation in the life of a saltwater shrimp in the breeding program at Sygen's SyAqua research center.

The shrimp were brought to Franklin from Hawaii, and Sygen, known locally by the name of their subsidiary, Pig Improvement Co., chose this spot for its SyAqua research work because it is so far from any ocean.

The oceans of the world are the natural breeding grounds for these shrimp, but they are also the source of illnesses that afflict them, so moving them to Kentucky removes one source of danger to the prawns, said Alen Miklica, a Croatian engineer who is in charge of the systems that keep the animals and their eggs alive.



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This program, located in Kentucky last year, got a boost this year as legislators included \$2.8 million in the state budget to help develop the saltwater shrimp breeding program in Kentucky.

Three higher learning institutions in the state, including Western Kentucky University, are part of the biotechnology program.

The state-funded portion of the project will soon include a facility at Western to breed and hatch the company's "research herd" of selectively bred saltwater shrimp.

Cheryl Slack, an executive at Sygen, was at her desk this week putting the operational timetables together for developing the shrimp research project with Western.

State Sen. Richie Sanders, R-Franklin, hailed SyAqua as the company that could revolutionize the shrimp industry in this country, with the cooperation of universities such as Western.

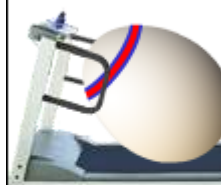
By allowing 100 times as many shrimp to be raised in the same area as is possible with freshwater shrimp, and developing systems for allowing year-round shrimp production, this research could mean a boom in saltwater-shrimp farming in the heart of horse country.

But first there are some obstacles to overcome.

Dr. Lali Abeydeera, the man from Sri Lanka mentioned earlier, is senior scientist and embryologist on the project. The doctor said he and his colleagues will selectively breed to develop strains that are more resistant to the illnesses that affect shrimp breeding programs around the world. Other aims include shrimp that grow the fastest and the largest of the species they are working with.

They also hope to breed for tolerance of lower salt levels so the animals can be grown more cheaply

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far from the sea.

Sanders said the project, if successful at devising a shrimp that can grow well here and an economically feasible system for growing them, could put a dent in the second-largest trade deficit in the nation.

He said oil is the largest component of the trade deficit, but shrimp is the second.

The saltwater shrimp will have to be inside if the year-round growth plan is to be followed, explained Stephen Pearce, biotechnology director for ConnectKentucky, a group that advocates the growth of technological programs in the state.

He said the construction of a tank for the shrimp has been done for as little as \$3,000, but most projects are more costly. To be viable year-round, an operation would need at least three tanks with water circulation and cleaning systems and an aeration system.

The water also has to be kept at about 70 degrees, so some kind of housing would be necessary as well.

Back at the lab, in addition to the observable characteristics of the shrimp, SyAqua is also studying the genetic expression of those traits.

Dr. Daniel Ciobanu, SyAqua's Romanian-born geneticist working on the saltwater shrimp project, said there isn't much information on the genetic map for these shrimp.

"If the genetic information of this shrimp was a map of the interstate from here to Chicago," Ciobanu said, "we would know about two of the off-ramps on that road."

But with the \$20 million SyAqua has invested in saltwater shrimp, they are planning on figuring out a little more information, said Pearce, who also works at Sygen in the biotechnology division. He

transferred there from his home in the United Kingdom, which is where Sygen is headquartered.

Sygen is hunting for the genetic expressions of the observable traits they are looking for, and using that data to choose breeding stock, said Christy Gladney, a molecular biologist at Sygen. Being from New Mexico, she is one of the few at the Franklin research facility working in the country of her birth.

It is that diversity that Sanders said is part of the importance of the state's participation in the program. He said this is one more way Kentucky can get its name out in the world scientific community and promote the state as a center for biotechnology.

Security is high at the labs. Officials said it is necessary to protect the health of the shrimp.

With the shrimp reaching the length and breadth of a large man's forearm at full maturity, their health could be seriously threatened by the two barbecue grills in the installation's back parking lot.

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